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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,589

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Alain Mazuir

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YOUNG & THOMPSON
209 Madison Street
Suite 500
ALEXANDRIA, VA 22314

EXAMINER

FERNANDEZ, KATHERINE L

ART UNIT

PAPER NUMBER

3768

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/565,589	Applicant(s) MAZUIR ET AL.	
	Examiner KATHERINE L. FERNANDEZ	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear as to what is meant by the phrase "said amplification is realized when two neighboring pixels provided with filters of yellow and green are such that the yellow pixel receives energy by *providing each red, blue or green components of at least one point of the image*, in addition with data collected so as to reconstitute the image of the biological tissue with a sum of amplified energy as received by two neighboring pixels provided with filters of yellow and magenta".

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2, 4-5, 9, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (US Pub No. 2001/0049473).

Hayashi discloses a method and system for detecting and locating the difference in density and/or structure and/or chemical composition of a biological tissue which is subjected to continuous illumination in a first determined band of frequencies, able to cause the tissue to generate a phenomenon of fluorescence, auto-fluorescence or

Art Unit: 3768

luminescence in a second band of frequencies (pg. 3, paragraph [0037]), comprising: capturing an image of the biological tissue illuminated in this way, using color video means provided with image sensors with a mosaic of pixels provided with filters of complementary colors (i.e. cyan, magenta and yellow), the filters having a greater range of reaction compared to filters of primary colors (pg. 4, paragraphs [0047]-[0050]; pg. 16, paragraphs [0200]-[0201]), for each point of the image so obtained: a) collecting data related to the energy received by each pixel, so as to reconstitute the image of the biological tissue (pg. 16, paragraphs [0204]-[0206]), and b) amplifying the signal corresponding to the energy received in the second band of frequencies so as to characterize or cause to appear the said difference of the biological tissue in the image obtained, by acting on signals as received by at least two pixels provided with filters of different colors (pg. 17, paragraph [0210],[0219]; pg. 18, paragraphs [0221]-[0223]); i.e. collected image signals undergo processing, such as amplification (i.e. signals from more than one pixel are amplified)). The data collected in the second band of frequencies is processed so as to characterize the structure difference obtained in a color other than the color naturally corresponding to this second zone of frequencies (pg. 18, paragraphs [0221]-[0223]). The first band of frequencies includes a visible part, and for each point of the image, said data related to the energy received by each pixel collected so as to reconstitute the image of the biological tissue, are derived from illumination in visible light and from fluorescence produced by said tissue (pg. 3, paragraphs [0037]-[0047]; pg. 15-16, paragraph [0199]). While translating data for display of each point of the image on a RGB video monitor, said amplifying is realized

by providing each red, blue, or green components of at least one point of the image, in addition with data collected so as to reconstitute the image of the biological tissue with a sum of amplified energy as received by at least two neighboring pixels provided with filters of different colors (pg. 16-17, paragraph [0207]).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claim 1 above, and further in view of Alfano (US Patent No. 5,042,494).

As discussed above, Hayashi meets the limitations of claim 1. However, Hayashi does not specifically disclose that radiations are added to a band of frequencies of the illumination spectrum that are able to modify the fluorescence spectrum to shift a fluorescence band of parasite fluorescence. Alfano discloses a method and apparatus for detecting the presence of cancerous tissue using native visible luminescence (column 1, lines 24-27). Alfano further disclose that the fluorescence spectra profile of cancerous tissue is different from the fluorescence spectra of normal tissue and that the fluorescence peak is blue-shifted in areas and in other samples red-shifted in areas corresponding to flavin and porphyrin peaks (column 2, lines 30-56). The salient

Art Unit: 3768

differences between the cancerous and normal tissues are that the spectral profiles are very different and that the cancerous prominent maxima are shifted and located around 521 nm, whereas the prominent maxima of the normal tissues spectra are located at about 531 nm (column 7, lines 54-59). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the invention of Hayashi to have radiations added to a band of frequencies of the illumination spectrum that are able to modify the fluorescence spectrum to shift a fluorescence band of parasite fluorescence, as Alfano teaches that different tissue structures have shifts in their fluorescence peaks.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi as applied to claim 1 above, and further in view of Palcic et al. (US Patent No. 5,507,287).

As discussed above, Hayashi meets the limitations of claim 1. However, Hayashi does not specifically disclose that the mosaic of pixels is further provided with a green filter. Palcic et al. disclose an apparatus for imaging abnormal tissues in the body to locate and identify areas that are otherwise not recognizable by white light endoscopy (column 1, lines 11-16). They disclose that they have observed a significant difference in the overall fluorescence intensity between normal and tumor tissue in the green region of the visible spectrum (column 2, lines 16-18). They disclose that their invention acquires filtered autofluorescence images and that a green filter is used to filter the autofluorescence light into a spectral band in which the autofluorescence intensity for abnormal tissue is substantially different from that of normal tissue (column 5, line 4-column 6, line 8). At the time of the invention, it would have been obvious to one of

Art Unit: 3768

ordinary skill in the art to modify the invention of Hayashi to have their mosaic of pixels further be provided with a green filter, as taught by Palcic et al., as the autofluorescence intensity for abnormal tissue is substantially different from that of normal tissue in the green region of the visible spectrum (column 2, lines 16-18).

Allowable Subject Matter

7. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or suggest a method wherein said tissue is a tooth, the fluorescence of deteriorated parts being in red, said amplification is realized when two neighboring pixels provided with filters of yellow and green are such that the yellow pixel receives energy by providing each red, blue or green components of at least one point of the image, in addition with data collected so as to reconstitute the image of the biological tissue with a sum of amplified energy as received by two neighboring pixels provided with filters of yellow and magenta in combination with the other claimed steps.

8. Claim 13-14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Art Unit: 3768

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHERINE L. FERNANDEZ whose telephone number is (571)272-1957. The examiner can normally be reached on 8:30-5, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric F Winakur/
Primary Examiner, Art Unit 3768